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NON-PROVISIONAL PATENT APPLICATION

**METHOD, BUSINESS PROCESSES AND APPARATUS FOR
REMOTE DATA, IMAGE AND VIDEO COLLECTION,
TRANSMISSION AND DISTRIBUTION USING CELLULAR
ELECTRONIC SERIAL NUMBER ENABLED DEVICES**

Related Applications: Application No(s). and Filing Date(s)
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Method, Business Processes and Apparatus for Remote Data Image and Video Collection, Transmission and Distribution Using Cellular Electronic Serial Number Enabled Devices

Related Applications

- 5 Priority is claimed to Provisional Application Serial No. 60/418,066 filed on October 11, 2002.

Background of the Invention

The invention relates generally to methods for collecting data, photographic images, sound and video using devices with unique electronic serial numbers (ESN) and then 10 receiving the collected data over the Internet on a secure application service provider's (ASP's) web site keyed to the electronic serial number(s) of the capturing device(s).

While many devices are available for data collection, photographic image collection (digital cameras) and video, these devices require subsequent connection to a computer to download the collected data. This downloaded data can then be uploaded 15 to Internet web sites where other users can access the information.

Public safety officers, news reporters, field data collection devices (meter readers and package delivery scanners) and general consumers could greatly benefit from the service provided by devices that automatically and wirelessly transmit data to designated, secure websites for immediate, secure, worldwide access. For example, a 20 digital camera on the top of a police vehicle triggered to take a series of photos of an officer's current situation and then wirelessly transmitted to the web could provide an almost real-time and cost effective solution for central dispatchers to "see" what officers are encountering and thus be able to respond accordingly. News reporters could take photos and write stories and then click the "send" button which would make the photos 25 and story text available via the Internet to any authorized user worldwide immediately.

Consumers that would like a digital alternative to the standard disposable film camera currently must pay for processing the film of the disposable camera and wait to receive digital images on CD or floppy disk via the U.S. mail or in person at a film processing

lab. The described system provides the methods, apparatus and business processes to enable disposable, wireless, real-time digital photography directly to the Internet without a consumer needing to upload it via their computer. There is a need for a simple to use and cost effective method for consumers and business users to capture real-time data and images that can be accessed by one or more authorized user, wirelessly, worldwide in a cost effective method. As will be seen, described herein this capability is provided in a useful and elegant manner.

Brief Description of the Drawings

Fig. 1 is an overview of the entire system illustrating components and business entities to facilitate one example of the invention.

Fig. 2 is a diagram of a Disposable Cellular Web Camera illustrating possible embodiments of external features for such a device.

Fig. 3 is a transmission flowchart illustrating logic used by a Cellular Web Camera to transmit pictures to the Web via the Cellular Service Provider (CSP).

Fig. 4 is a diagram illustrating how a non-disposable embodiment of the invention could be implemented using Universal Serial Bus (USB) connectivity to a Pocket PC (PDA).

Fig. 5 illustrates four different types of billing and processing models that are useful for different types of applications of the invention for differing end user requirements.

Summary

Useful methods, apparatus and business processes for remote, real-time data and/or image collection, wireless transmission and distribution for access and use by authorized Internet users real-time, worldwide, are provided as described. Digital photographic electronics and/or other data capture/collection devices and serialized cellular/radio transmission techniques using an electronic serial number as described herein allow for standardized, real-time, wireless, anonymous, secure, globally accessible and cost effective image and data collection and distribution. There are numerous different configurations described herein that are viable for different

applications for different user types. Consumers may use this as a personal photographic album and distribution tool. More sophisticated consumers may use this to provide web based albums and secure access to authorized individuals utilizing existing digital photographic equipment and USB or other device interfaces that provide
5 cellular web transmission to a more configurable and feature rich ASP web hosting environment with a billing arrangement by picture or transfer time interval, storage time, size, and the like. Other consumers may wish to utilize a hybrid approach by buying an inexpensive cellular web camera that uses prepaid photo cards. For example, the device could be programmed to send all images to specific folders within the
10 consumer's secure ASP web site by date. As a prepaid account is depleted, more can be added by credit card or cash procurement of prepaid cards sold at retail locations or over the Internet. The cards would then be used, via a web based ASP interface, to authorize the cellular web cam ESN to resume transmitting images.

Commercial users could have a different business process where multiple devices and
15 their corresponding ESN would be aggregated to a specialized and customized ASP hosting site or data feed using web services, XML or other mutually specified data transmission protocol. For example, public utility meter readers, potentially hundreds or even thousands of devices and employees, could have all devices channeled to their specific ASP hosted web site whereby the office could see real-time data being
20 collected by each meter reader in the field. This example would utilize a business process whereby the CSP would bill the commercial enterprise for transmission by accumulated minutes, records, data volume/bandwidth used or any of a number of other readily available metrics. The ASP service would also bill the utility enterprise for custom setup, software development, security, hosting service, bandwidth, storage and,
25 again, numerous other readily available metrics.

Parcel delivery companies utilizing the cellular web data collection application described
may wish to have data collected and aggregated and then forwarded by mutually
agreed upon protocol to their designated Internet server/site address for further
processing. The described embodiment allows for contract and business process
flexibility herein. The parcel delivery firm could be billed by the CSP for transmission
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time, bandwidth, number of records (package scans for example) as well as numerous other readily available metrics. The ASP business process could be simply fees for setup and custom protocol definition and testing and then billing for ongoing aggregation and forwarding of collected data by record, transfer time, bandwidth,
5 calendar period flat rate service, or any other mutually satisfactory billing arrangement.

All consumer and commercial applications of the invention require cellular web devices and prepaid anonymous accounts (one time or via prepaid cards to "fill-up the bank") or by credit card or direct billing for each device ESN by agreed unit of measure.

Detailed Description

- 10 The described apparatus, method and article generally pertains to methods, business processes and apparatus for remote, real-time, data and/or image collection, wireless transmission and distribution for access and use by authorized Internet users worldwide. However, it will be appreciated by those skilled in the art, that this is illustrative of only a few of the applications of the invention, which has greater
15 applicability and utility in many other applications where the use of real-time data and/or image collection, transmission and presentation is involved. Equivalent structures and functions embodying the invention could be configured for other such applications without diverting from the spirit and scope of the invention as described in this disclosure.
- 20 Referring to Fig. 1, a system overview is presented. While the invention is described in terms of a cellular web device, it could easily be a satellite interface web device.

Applications of the invention generally begin with a digital camera (disposable cellular or satellite interface web camera, "rechargeable" using prepaid photo cards, or standard digital camera with cellular web interface) or other data collection device with embedded
25 cellular interface web communication device or interfaced cellular interface web device as shown at 100. A cellular or PCS (personal communications service) service provider 110 that accepts the data device "phone call" or cellular/PCS transmission 105 and recognizes it as a data call and then packages the packet data with the device

- electronic serial number (ESN), such as IP address or other suitable identifier, and forwards it to the appropriate application service provider 130. The "phone call" could be made to a specially designated number such as 611, 411 or 911 that are now accommodated on cellular phones. For example, the number 777 could be allocated as
- 5 the "standard" data/image upload "phone number". The routing from CSP 110 to an appropriate ASP 130 can be accomplished by a database lookup at the CSP 110 that correlates Device 100's ESN with ASP 130. Once the ASP 130 receives the data it then performs a database lookup with the data device 100 ESN as the key to determine what to do with the data. The data is then organized for subsequent access by
- 10 authorized users 145 via the Internet 120. An ESN is assigned to the data originating device or data transmission interface device. This ESN is used to access the CSP system 110 and is used again by the ASP 130 to determine disposition of data and is used again finally by the end user 145 as a key element of the required access credentials.
- 15 One business process application is the assignment of an initial password to a disposable cellular web camera 200, seen generally in Fig. 2, via a package insert. The package insert would be visible only after the package was opened and would be a removable card for future access of images taken with the camera 200. Additionally, for "rechargeable" cellular web cameras, the prepaid cards used to recharge the camera
- 20 have similar codes that are used to authorize the transfer and access of additional images using the system. When the prepaid cards are purchased via cash, check or credit card in retail store locations or over the web, they are activated by going online to the appropriate ASP 130 website (URL is printed on the Prepaid Photo Card) and then linking the prepaid photo card key with a particular ESN. This in turn authorizes that
- 25 particular ESN for an additional block of image transfers utilizing a particular CSP 110 which has already received compensation via the sale of the prepaid card.
- With continued reference to Fig. 2, item 205 is the camera "shutter" button used to take pictures. Item 210 is a special emergency button that immediately sends the last image taken to 911 in addition to its normal route. This function can be used to signal
- 30 emergency response authorities of any particular circumstance (crime, accident, fire,

natural disaster) via a real-time digital photograph. Item 220 is one possible user interface implementation of the invention to provide camera 200 status information to the user such as cellular web camera signal strength, number of pictures taken and available, battery condition, and the like.

- 5 Applications follow data transmission logic similar to that of the cellular web camera shown in Fig. 3. Once images are captured via the camera 200 using the "shutter button" 205, the camera display 220 is updated to illustrate that one more image has been captured (picture taken) and the corresponding counters are incremented as shown in the flowchart 300 through 310. If the last picture available was taken, image
10 27 out of 27 as an example, for a device sold with a 27 image capacity, the camera, i.e., the image capturing portion of the device would then stop 320. Meanwhile, presuming adequate signal strength 325, the cellular web portion of the device would be transmitting captured images until they were all sent and received 330 though 355. Note that in step 340, this particular application of the invention deletes the photo from
15 the device after successfully transmitting the image. This prevents undesired access of photos from discarded disposable cellular web camera devices 200.

Additional invention utility is disclosed in Fig. 4. As seen generally in this figure, specialized software running on the PDA downloads the pictures or data (move or copy) from memory on the digital camera or data collection device and then transmits those
20 pictures or data elements using the PDA's built in cellular connection via the CSP. More specifically, this diagram illustrates the use of existing image and data capture and storage devices 400 and how they may be used with cellular web access being provided by, in this example, a PDA with cellular access 410 running special Cellular Web Access software that "instructs" the CSP 110 what to do with the incoming "phone call" 420. The device shown in this example 400 could be any standard digital camera or other data collection and/or storage device with a standard interface such as a universal serial bus (USB) 405 used to connect it to the Cellular Web Access PDA 410. Many other applications of the invention could use specially designed and embedded
25 cellular web access components such as the public safety, parcel delivery and public utility examples cited earlier in this invention disclosure. The invention would provide
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capability for completely unmanned operations such as video or photo capture for surveillance or reading gas meters real-time at desired frequency intervals that were never practical prior to this invention.

Fig. 5 illustrates several possible variations of the application of the invention. Example

- 5 A shows the Disposable Cellular Web Camera where the end user is a buyer, or buyer authorized user, of the disposable camera who received the Internet/ASP access credentials. Example B illustrates a consumer with a generic digital camera and Cellular Web interface device that allows pictures to be accessed with ASP access credentials. Example C depicts a commercial user application, perhaps newspaper reporters or public safety officer cameras that trap real-time images of field operations.
- 10 In this example, the ASP would have a custom interface that collects multiple Cellular Web interface device Electronic Serial Numbers (ESNs) and then displays or transfers the aggregated collections to the newspaper or police department dispatch centers. Example D depicts commercial applications of Cellular Web interface devices for data collection. Parcel delivery personnel using package scanners to provide timely package delivery status to clients could use this type of device to make the updates real-time. Utility readers could use this to eliminate needed trips back to the central office from the field for data downloading. Ultimately, this type of device could be embedded in the gas meter and preclude the need for meter readers altogether. Again, in this example, the
- 15 data collected by multiple different devices would be aggregated for data transfer or display to the owner of their respective device ESN. More specifically, the branch denoted as A begins at 500. This branch is the disposable and/or rechargeable consumer cellular web camera application described earlier in this invention disclosure. Consumers of this embodiment of the invention enjoy complete anonymity. One
- 20 business process disclosed herein is the revenue agreement between the device 500 manufacturers that receive the revenue from the sale of the product to the retail outlet or distributor and the CSP 530 that gets a predetermined block of revenue for each device 500 sold that compensates it for providing the transmission service and the ASP 540 that receives predetermined front-end revenue when the device 500 is sold for providing
- 25 ultimate photo access via the web. In some applications of the invention, ASP 540 may derive tail-end revenue and ongoing monthly revenue as it relates to customization and
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additional functionality up-sells to consumers, end users 545. Other applications of the business processes of the invention describe large ISP (such as well known providers AOL, MSN, Earthlink) desire to participate in the marketing of devices such as 500 as a means of getting their respective ISP access CDs packaged with the device 500 in the 5 pursuit of more ISP customers. This business process would include payment for cross promotion of the ISP services within the context of the device 500 sale that will ultimately require Internet access to use it.

Branch B of Fig. 5 starting with 505 shows the aforementioned application of the invention using standard interfaces such as USB to equip existing digital cameras and 10 other data collection and storage devices for cellular web access. This branch is interesting as the business process used herein could be by prepaid billing as described earlier in the A branch, or could be via direct billing or by credit card as cellular phone services are at present for voice communication. Several examples of per unit billing mechanisms whether prepaid, direct billed or paid via credit card and tied to the CSP 15 via the device ESN are possible. Billing information, account status, data access and all other needed end user interface is handled via the ASP 540 web site(s) in this example of the invention.

Branch C of Fig. 5 beginning with 510 illustrates possible commercial and government 20 applications of the invention. While these applications could use disposable, rechargeable or existing devices with interfaces, the invention provides for aggregation and consolidation of multiple data streams from multiple devices each with a unique ESN into one data feed (parcel delivery example disclosed earlier) from the ASP 540 or web interface (public safety dispatch center example disclosed earlier) provided by the 25 ASP 540. These applications of the invention provide for flexible and readily customizable solutions offered via the ASP 540. One business process application of the invention is the case of newspaper reporters all using unique devices with unique ESNs that are billed to the newspaper directly and the data is aggregated and displayed automatically on a central secure web site for interactive editorial staff to use as a palette of "late breaking" or real-time images to embed in their respective web offerings. 30 In this model, the CSP 530 would have a direct per unit (minute of transmission time

used, MB of data transferred or bandwidth used, or perhaps flat monthly per device fee up to a certain number of records) billing relationship with the newspaper. Additionally, the ASP 540 that is providing the interface, application, data storage, web access bandwidth, etc. would have a direct billing relationship with the newspaper as well on a 5 predefined unit basis.

Branch D of Fig. 5 beginning with 520 shows essentially the same model as Branch C except that the data being collected could be very small fragments of information, not discrete files as is the case with photo transmission. Examples of these fragments, using the parcel delivery service example of the application of the invention, could 10 include package scans that capture time, date, package ID, scan employee (if not automated), location and other pertinent information in a single record. The business process here utilizes billing schemes as described earlier in this invention disclosure with different units applied (records, bytes, transmissions, etc.) and would almost certainly create an XML or other agreed protocol data feed from the ASP 540 to the end 15 user organization (parcel delivery firm in this example) 545.

The invention is directed to methods, apparatus and business processes for enabling real-time, globally accessible, cost effective, wireless image and/or data transmission and presentation for several example consumer and commercial applications. The invention has features that may be useful in other applications. Furthermore, while the 20 foregoing description has been with reference to particular embodiments of the invention, it will be appreciated that these are only illustrative of the invention and that changes may be made to those embodiments without departing from the principles of the invention, the scope of which is defined by the spirit and scope of this overall description.